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W. D. SHAFFER

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ROD GRIP

Filed June 10, 1924

Fig. 1

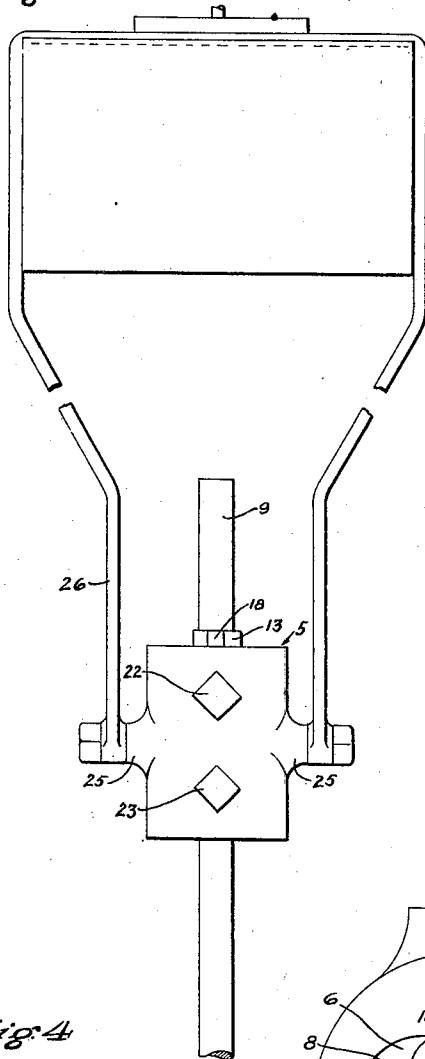


Fig. 2

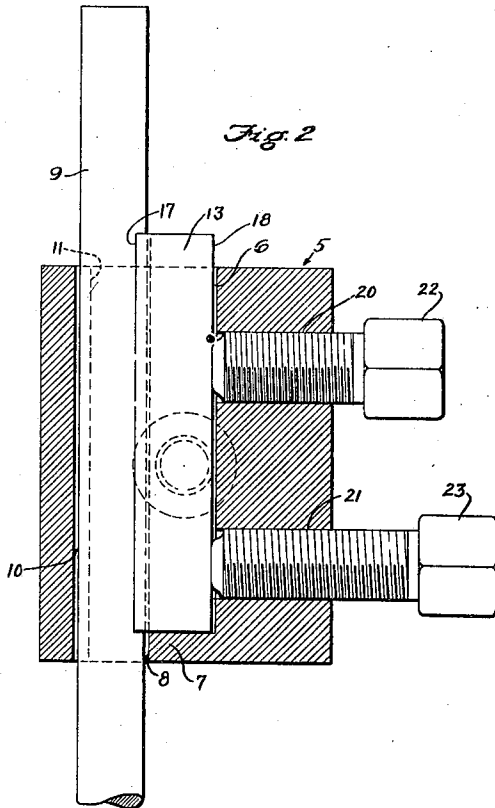


Fig. 4

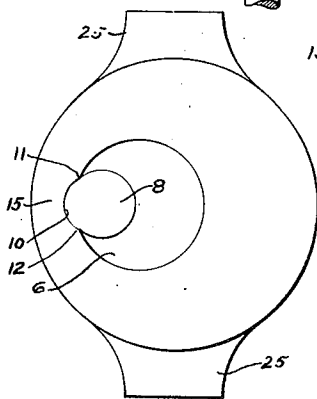
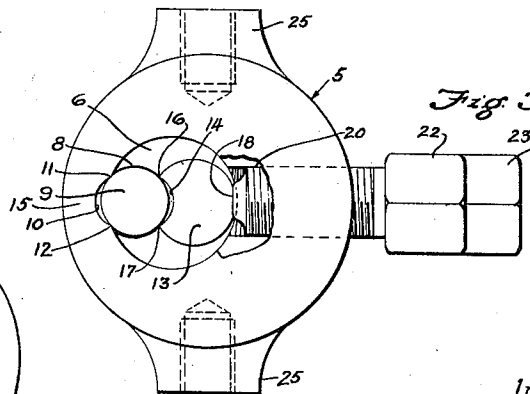


Fig. 3



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ROD GRIP

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This invention relates more specifically to a gripping device designed to be employed in frictionally connecting the upper end of well pump rods to their reciprocating mechanism.

5 The purposes of my invention are to provide a pump rod gripping device that will effectually grip the rod without roughening, or otherwise injuring its surface; that may be quickly secured to and removed from a rod
10 when it is desired to change its position; in which its gripping or clamping members are so arranged and constructed that heavy or unusual loads may be safely imposed thereon without endangering a slippage of the rod
15 or the gripping elements.

My invention broadly comprises a cylindrical body member provided with a cylindrical concavity extending from the upper end downwardly and terminating adjacent
20 the lower end, the bottom wall of the concavity being provided at one side of its central vertical axis with a vertically disposed circular bore, a segmental recess being formed in the wall of the concavity and opening into
25 the circular bore, a slip member having a longitudinally disposed concavity segmental in cross section, and set screws passing through the body member and engaging the slip to force the same into frictional engagement
30 with the rod to be gripped when the same is passed through the circular bore of the body member.

In the accompanying drawings I have illustrated a preferred embodiment of my invention, it being understood however, that
35 no limitation is necessarily made to the precise structural details therein exhibited, but various changes, alterations and modifications may be resorted to within the scope of
40 my invention when desired.

Fig. 1 is a side elevation of a gripping device embodying the features of my invention suspended from the end of a walking beam, the polished pump rod being held in gripped
45 relation.

Fig. 2 is a central vertical section through the grip showing a rod mounted therein in gripped position.

Fig. 3 is a top plan view with a rod gripped therein.

Fig. 4 is a top plan view with the rod slip removed therefrom.

Referring more particularly to the drawings, 5 designates a substantially cylindrical body member, provided with a cylindrical
55 concavity 6 that extends downwardly from the upper end and terminates adjacent the bottom wall 7, the concavity 6 being disposed to one side of the central vertical axis of the body member. The bottom wall 7 is provided with a vertical circular bore 8, for
60 the passage therethrough of the upper end of the pump rod 9, that is to be engaged and held by the grip. Formed in the cylindrical wall of the concavity 6 and opening
65 into the bore 8, is a longitudinally disposed recess 10, segmental in cross section, the distance between the vertical edges 11, 12, of the recess being less than the diameter of the pump rod. Disposed in the concavity 6, between
70 the pump rod 9, and the wall of the concavity is a slip member 13, provided with a vertically extending groove 14, segmental in cross section, similar in all respects to the recess formed in the thin cylindrical wall 15 of
75 the body member, the distance between the vertical edges 16, 17, being substantially the same as the distance between the edges 11, 12, of the vertical recess 10. Slip member 13 is provided on its peripheral surface with a
80 vertically extending flattened portion 18, oppositely disposed to groove 14.

Body member 5 is provided in its cylindrical side wall with a pair of threaded bores
85 20, 21, opening into the concavity 6, in which are mounted set screws 22, 23, the bearing ends of the screws abutting against the flattened portion 18 of the slip member to firmly clamp the pump rod 9 between the vertical edges 11, 12, of the recess 10, and the vertical edges 16, 90

17, of the groove 14 formed in the slip member. As the bore 8 of the body member 5 is slightly larger in diameter than the diameter of the pump rod, and further, as the radii of the recess 10 and the groove 14 are less than the radius of the pump rod, it will be clear that the only portions of the recess 10 and groove 14 that contact with the rod are their vertical edges.

10 It will be apparent from the above that by forming grooves in the wall of the concavity and in the slip member, that the rod will be held in gripped relation solely by the vertical edges of the recess and groove, and
15 as the set screws are tightened a wedging action will be set up, which action greatly increases the frictional grip on the rod.

Trunnions 25 are formed on the body member for the purpose of pivotally attaching the
20 lower ends of a hanger strap 26, that is secured to one end of a walking beam, it being understood that other types of grip suspension means may be employed if desired. The bottom wall 7 of the body member provides a support or abutment which will prevent the slip member from moving independently of the grip.

In actual practice I have ascertained that my improved gripping device in "pulling
30 tests" will develop a greater gripping action than grips utilized for a similar nature now on the market. In a laboratory test conducted by competent engineers a polished steel rod of $1\frac{1}{8}$ inches in diameter, was inserted in my
35 rod grip and the set screws were tightened by applying a "Trim" wrench thereto. A tensile load on the polished rod was then applied until it slipped, it requiring a maximum load of 39,300 pounds before a slippage occurred.
40

The above laboratory test developed the fact that my improved gripping mechanism sustained a load of nearly 10,000 pounds in excess of the maximum loads sustained by
45 other well known grips in similar tests.

It will be understood that my device is not designed to be used exclusively in connection with polished rods of oil well pumps, but is readily adaptable for use wherever a friction hold is desired on a round bar or cable.
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What I claim is:

In a rod grip, a body member having a cylindrical recess extending downwardly from its upper end, the bottom wall of said
55 recess being provided with a circular bore therethrough, the wall of said recess having a longitudinal groove formed therein and opening into the circular bore formed in the bottom wall of the body member, the side
60 edges of said groove forming rod engaging edges, a slip member provided with a longitudinal groove segmental in cross section, said slip member being normally supported by the bottom wall of the recess, the edges of said
65 longitudinal groove forming rod engaging

edges, the circular bore in the bottom wall of the recess being greater in diameter than the rod to be gripped, and a pair of screws extending transversely through the cylindrical member and engaging the slip member to force the same into gripped relation with the rod.

In witness that I claim the foregoing I have hereunto subscribed my name this 1st day of May, 1924.

WILLIAM D. SHAFFER.